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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,213	11/25/2003	Mark Andrew Stewart	1400B-000011/US	5521

27572 7590 02/18/2009

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER	
LOO, JUVENA W	

ART UNIT	PAPER NUMBER
2416	

MAIL DATE	DELIVERY MODE
02/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,213	STEWART, MARK ANDREW	
	Examiner	Art Unit	
	JUVENA LOO	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Schwartz et al. (US 6,421,342 B1).

Regarding claim 1, Schwartz et al. discloses *a switch* (Schwartz: see Figures 3 and 4), *comprising*:

a forwarding table (Schwartz: see Figure 2 Switch Plane 22(1) through 22(P); see also Figure 7, Table 73(1) through Table 73(N); see also "Stage 72(N) also includes a table…included routing information" in column 17, lines 36 – 39); *and*

a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions in the forwarding table, wherein each of the plurality of DLIDs corresponds to one of a plurality of routing trees and one of a plurality of end nodes in a network (Schwartz: see Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14) *and wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non-interfering network* (Schwartz: see "With this background, the binary search…comparison trees is not constrained as described above" in column 20, line 15

through column 23, line 30; see also Figure 4 and "A functional block diagram of a switch plane…output port modules at any point in time" in column 11, lines 6 – 50).

Regarding claim 5, Schwartz et al. discloses *a switch* (Schwartz: see Figures 3 and 4) *comprising a computer-readable medium containing computer instructions for instructing a processor to perform a method of populating a forwarding table* (Schwartz: see Figure 2 Switch Plane 22(1) through 22(P); see also Figure 7, Table 73(1) through Table 73(N); see also "Stage 72(N) also includes a table…included routing information" in column 17, lines 36 – 39; see also Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14), *the instructions comprising*:

calculating a plurality of routing trees for the switch (Schwartz: see Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14);

calculating a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions for the switch, wherein each of the plurality of DLIDs corresponds to one of the plurality of routing trees and one of a plurality of end nodes in a network (Schwartz: see Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14) *and wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non-interfering network* (Schwartz: see "With this background, the binary search…comparison trees is not constrained as described above" in column 20,

line 15 through column 23, line 30; see also Figure 4 and "A functional block diagram of a switch plane…output port modules at any point in time" in column 11, lines 6 – 50); *and*

populating a forwarding table of the switch with the plurality of DLIDs and the set of forwarding instructions (Schwartz: see Figure 2 Switch Plane 22(1) through 22(P); see also Figure 7, Table 73(1) through Table 73(N); see also "Stage 72(N) also includes a table…included routing information" in column 17, lines 36 – 39; see also Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14).

Regarding claim 11, Schwartz discloses *a switch comprising a computer-readable medium containing computer instructions for instructing a processor to perform a method of forwarding a packet within a network* (Schwartz: see "An apparatus and method for forwarding packets…at the destination node" in Abstract), *wherein the packet is created at one of a plurality of sources and is addressed to one of a plurality of destinations within the network* (Schwartz: see "A source device 12(m_s)…at the destination device 12(m_D)" in column 4, line 66 through column 5, line 16), *the instructions comprising:*

populating a forwarding table of the switch with a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions (Schwartz: see Figure 2 Switch Plane 22(1) through 22(P); see also Figure 7, Table 73(1) through Table 73(N); see also "Stage 72(N) also includes a table…included routing information" in column 17, lines 36

– 39; see also Figure 8 and "FIG. 8 depicts a functional block diagram…comprise routing information" in column 19, line 4 through column 20, line 14) *and*

wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non- interfering network (Schwartz: see "With this background, the binary search…comparison trees is not constrained as described above" in column 20, line 15 through column 23, line 30; see also Figure 4 and "A functional block diagram of a switch plane…output port modules at any point in time" in column 11, lines 6 – 50); *and*

the packet following a path through the switch from the one of the plurality of sources to the one of a plurality of the destinations (Schwartz: see "A source device 12(m_s)…at the destination device 12(m_D)" in column 4, line 66 through column 5, line 16),

wherein the switch forwards the packet according to one of the plurality of DLIDs assigned to the packet (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30), *and*

wherein the one of the plurality of DLIDs assigned to the packet corresponds to one of the plurality of DLIDs and the set of forwarding instructions in the forwarding table (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30).

Regarding claim 14, *wherein the packet following the path comprises looking up the one of the plurality of DLIDs assigned to the packet in the forwarding table at the switch* (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional...comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30).

Regarding claim 15, *wherein the packet following the path comprises the switch forwarding the packet in accordance with the one of the plurality of DLIDs assigned to the packet and the set of forwarding instructions as found in the forwarding table of the switch* (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional...comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 6, 12, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz et al. (US 6,421,342 B1) in view of Dally (US 2003/0058848 A1).

Schwartz discloses all the claimed limitations as in paragraph 3 above. However, Schwartz does not explicitly disclose the following features:

Dally discloses an improvement to scheduling of calls comprising the features:

Regarding claim 2, Dally discloses *wherein the network is a Clos network* (Dally: see Figures 4A and 4B; see also ""Consider a Clos network...to output switches" in page 3, sections 0043 – 0044).

Regarding claim 6, Dally discloses *wherein the network is a Clos network* (Dally: see Figures 4A and 4B; see also ""Consider a Clos network...to output switches" in page 3, sections 0043 – 0044).

Regarding claim 12, Dally discloses *wherein the network is a Clos network* (Dally: see Figures 4A and 4B; see also ""Consider a Clos network...to output switches" in page 3, sections 0043 – 0044).

Regarding claim 19, Schwartz discloses *a switch comprising a computer-readable medium containing computer instructions for instructing a processor to perform a method of forwarding a packet within a network, wherein the packet is created at one*

of a plurality of sources and is addressed to one of a plurality of destinations within the network (Schwartz: see "An apparatus and method for forwarding packets...at the destination node" in Abstract), *the instructions comprising*:

populating a forwarding table of the switch with a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions (Schwartz: see Figure 2 Switch Plane 22(1) through 22(P); see also Figure 7, Table 73(1) through Table 73(N); see also "Stage 72(N) also includes a table...included routing information" in column 17, lines 36 – 39; see also Figure 8 and "FIG. 8 depicts a functional block diagram...comprise routing information" in column 19, line 4 through column 20, line 14) *and*

wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non- interfering network (Schwartz: see "With this background, the binary search...comparison trees is not constrained as described above" in column 20, line 15 through column 23, line 30; see also Figure 4 and "A functional block diagram of a switch plane...output port modules at any point in time" in column 11, lines 6 – 50); *and*

the packet following a path through the switch from the one of the plurality of sources to the one of a plurality of the destinations (Schwartz: see "A source device 12(m_s)...at the destination device 12(m_D)" in column 4, line 66 through column 5, line 16),

wherein the switch forwards the packet according to one of the plurality of DLIDs assigned to the packet (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a

functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30),

wherein the one of the plurality of DLIDs assigned to the packet corresponds to one of the plurality of DLIDs and the set of forwarding instructions in the forwarding table (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30),

wherein one of the plurality of DLIDs assigned to the packet in the forwarding table is looked up at the switch (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30), *and wherein the switch forwards the packet in accordance with the one of the plurality of DLIDs assigned to the packet and the set of forwarding instructions as found in the forwarding table of the switch* (Schwartz: see Figures 8 and 9; see also "FIG. 8 depicts a functional…comparison trees is not constrained as described above" in column 19, line 4 through column 23, line 30).

However, Schwartz does not explicitly disclose the feature:

wherein the network is a Clos network.

Dally discloses an improvement to scheduling of calls comprising the features:

wherein the network is a Clos network (Dally: see Figures 4A and 4B; see also ""Consider a Clos network...to output switches" in page 3, sections 0043 – 0044).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Schwartz et al. by using the features, as taught by Dally, in order to configure Clos switching network (Dally: see Figures 4A and 4B; see also ""Consider a Clos network...to output switches" in page 3, sections 0043 – 0044).

5. Claims 3, 4, 7 - 10, and 16 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz et al. (US 6,421,342 B1) in view of Brahmaroutu (US 2003/0033427 A1).

Regarding claim 3, Brahmaroutu discloses *wherein the plurality of routing trees comprises for each spine node in the network, a shortest path from the spine node to each of the plurality of end nodes* (Brahmaroutu: see "Then the subnet manager (SM) 450A…LID of which is lower than that of switch (S3) 430" in pages 5 – 6, sections 0046 – 0054).

Regarding claim 4, Brahmaroutu discloses *wherein each of the plurality of routing trees comprises at least a portion of a plurality of switches in the network and corresponding plurality of links that form a shortest path from one of the plurality of end*

nodes to a spine node of the network (Brahmaroutu: see Figures 7 – 8; see also "During the process of building a forwarding table…requests for paths with specific costs" in page 7, sections 0060 – 0064; see also "FIG. 8 illustrates a detailed flowchart…subnet 400 at block 854 and block 856" in pages 7 – 8, sections 0067 – 0077).

Regarding claim 7, Brahmaroutu discloses *wherein each of the plurality of end nodes comprises a destination, and wherein the destination is identified by a BaseLID* (Brahmaroutu: see "Every switch and each port…128 LIDs to a port" in page 4, section 0031).

Regarding claim 8, Brahmaroutu discloses *wherein calculating the plurality of routing trees comprises for each spine node in the network, calculating a shortest path from the spine node to each of the plurality of end nodes* (Brahmaroutu: see "Then the subnet manager (SM) 450A…LID of which is lower than that of switch (S3) 430" in pages 5 – 6, sections 0046 – 0054).

Regarding claim 9, Brahmaroutu discloses *wherein each of the plurality of routing trees comprises at least a portion of a plurality of switches and corresponding plurality of links in the network that form a shortest path from one of the plurality of end nodes to a spine node of the network* (Brahmaroutu: see Figures 7 – 8; see also "During the process of building a forwarding table…requests for paths with specific costs" in page 7,

sections 0060 – 0064; see also "FIG. 8 illustrates a detailed flowchart…subnet 400 at block 854 and block 856" in pages 7 – 8, sections 0067 – 0077).

Regarding claim 10, Brahmaroutu discloses *wherein the shortest path is loop-less* (Brahmaroutu: see "The subnet manager (SM) 450A…a new link being inserted" in page 6, section 0055).

Regarding claim 16, Brahmaroutu discloses *wherein the switch is an switch in compliance with an InfiniBand Architecture Specification* (Brahmaroutu: see "According to an example…forming the NGIO/InfiniBand™ switched fabric 100'" in page 2, section 0021).

Regarding claim 17, Brahmaroutu discloses *wherein the switch is an switch in compliance with an InfiniBand Architecture Specification* (Brahmaroutu: see "According to an example…forming the NGIO/InfiniBand™ switched fabric 100'" in page 2, section 0021).

Regarding claim 18, Brahmaroutu discloses *wherein the switch is an switch in compliance with an InfiniBand Architecture Specification* (Brahmaroutu: see "According to an example…forming the NGIO/InfiniBand™ switched fabric 100'" in page 2, section 0021).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Schwartz et al. by using the features, as taught by Brahmaroutu, in order to find shortest path routes using the spanning tree algorithm (Brahmaroutu: see "A mechanism…every switch pair" in Abstract).

Response to Arguments

Regarding claims 1, 5, and 11, the applicant argued, as in page 7, that ""Schwartz reference fails to disclose creating "path appropriate to make the network operate as a strictly non-interfering network"".

In response, the examiner respectfully disagrees with the applicant's argument. As stated in the applicant's specification, page 5, lines 9 – 11, stating that "The implementation of a SNIN requires that resources be dedicated through the network in support of an active communication session. In order to accomplish this, non-blocking networks can be used." Therefore, the examiner is taking the broadest interpretation and consider a non-blocking network can be used to accomplish a strictly non-interfering network. Furthermore, Schwartz discloses a method and apparatus for forwarding packets of data across a switching node on a network that is non-blocking (Schwartz: see column 11, lines 6 – 50).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUVENA LOO whose telephone number is (571)270-1974. The examiner can normally be reached on Monday - Friday: 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hanh Nguyen/
Primary Examiner, Art Unit 2416

/JUVENA LOO/
Examiner
Art Unit 2416
February 13, 2009